

The Role of Exports in the U.S. Fruit and Vegetable Industry

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Abstract: Exports of fruits and vegetables have expanded this decade, with rising U.S. supplies and the gradual lowering of trade barriers. While the domestic market remains the major outlet for almost all fruits and vegetables raised in the United States, the role of exports has steadily increased. In 1997, 9.6 percent of the total supply of U.S. fruit, tree nuts, vegetables, and melons were exported—26 percent more than in 1990. The fruit industry is more export-dependent than the vegetable industry, with 11.5 percent of fruit and tree nut supply exported compared with 8.4 percent of vegetables. Americans generally consume more vegetables than fruit, partially explaining the greater reliance on exports for the fruit industry.

Keywords: Trade, exports, fruits, vegetables, tree nuts, dry beans, supply

Exports of fruits and vegetables continued to expand in the nineties as U.S. supplies rose and trade barriers fell. Fruits, tree nuts, vegetables, and pulses accounted for nearly 17 percent of U.S. agricultural export value in 1998—up from about 14 percent in 1990. While the domestic market remains the major outlet for almost all fruits and vegetables grown in the United States, foreign market growth has outpaced domestic growth. New or expanded markets are continuously being sought to expand market potential.

In 1997, 9.6 percent of the total supply (volume) of U.S. fruit, tree nuts, vegetables, and melons was exported, 26 percent more than in 1990 (tables A-1 and A-2). The fruit industry is more export-dependent than the vegetable industry, with 11.5 percent of fruit and tree nut supply exported and only 8.4 percent of all vegetables and melons. Americans generally consume more vegetables than fruit, partially explaining the greater reliance on exports for the fruit industry. The difference is even greater for fresh produce, with 24.6 percent of fresh fruit supply exported in 1997 compared with only 7.6 percent of fresh vegetables and melons. Export dependency of specific commodities within the fruit and vegetable industries also varies.

As industries become more dependent on the export market, they must also contend with new marketing risks besides those already inherent in these industries (e.g. inclement weather and import competition). Marketing internationally requires adjustments to such things as varying macroeconomic situations which affect exchange rates and final demand (e.g. the recent Asian monetary crises). It also requires careful study of the target markets to gain an understanding of the specific demand criteria of foreign consumers.

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Table A-1--Fruit and vegetable exports as a percent of supply, 1997 1/

Item	Exports	Supply	Exports as
			a percent of supply
	-- Mil. lbs. --		Percent
Vegetables:			
Fresh vgs. & melons 2/	3,698	48,723	7.6
Fresh, excl. potatoes	3,255	40,126	8.1
Melons	443	8,597	5.2
Potatoes, all	3,847	44,535	8.6
Fresh-market	670	13,500	5.0
Processing	3,177	31,035	10.2
Canned 2/	3,912	49,838	7.8
Frozen 2/	924	11,191	8.3
Sweet potatoes	30	1,420	2.1
Dry beans	801	4,373	18.3
Dry peas & lentils	384	759	50.5
Mushrooms, all	25	1,113	2.3
All vegetables	13,621	161,952	8.4
Fruits:			
Fresh, all	5,089	28,098	18.1
Excluding bananas	5,089	20,690	24.6
Frozen	110	1,849	5.9
Canned 3/	90	5,481	1.6
Dried	1,631	5,186	31.5
Juice	3,749	54,825	6.8
Tree nuts	523	1,486	35.2
All fruits & nuts	11,192	96,925	11.5
Fruit & vegetables			
Fresh, incl. fresh potatoes	9,457	90,321	10.5
Excluding bananas	9,457	82,913	11.4
Frozen (incl. potatoes)	2,953	33,420	8.8
Canned (incl. potatoes)	4,051	55,847	7.3
Other 4/	8,352	79,027	10.6
All fruits & vegetables	24,813	258,615	9.6

1/ All data are expressed in terms of fresh weight. 2/ Excludes fresh potatoes.

3/ Includes pineapple. 4/ Includes sweetpotatoes, dry beans, dry peas, mushrooms, fruit juice, dried fruits, tree nuts, dehydrated potatoes, and potato chips.

Source: Economic Research Service, USDA.

Table A-2--Fruit and vegetable exports as a percent of supply, 1990 1/

Item	Exports	Supply	Exports as a percent of supply
	-- Mil. lbs. --		Percent
Vegetables:			
Fresh vgs. & melons 2/	2,685	38,774	6.9
Fresh, excl. potatoes	2,463	32,406	7.6
Melons	223	6,368	3.5
Potatoes, all	1,719	34,666	5.0
Fresh-market	327	12,019	2.7
Processing	1,392	22,647	6.1
Canned 2/	1,604	45,948	3.5
Frozen 2/	689	9,535	7.2
Sweet potatoes	15	1,318	1.1
Dry beans	1,107	4,236	26.1
Dry peas & lentils	282	437	64.6
Mushrooms, all	32	962	3.4
All vegetables	8,134	135,877	6.0
Fruits:			
Fresh, all	4,100	27,379	15.0
Excluding bananas	4,100	21,290	19.3
Frozen	60	2,183	2.7
Canned 3/	96	5,257	1.8
Dried	1,559	5,209	29.9
Juice	2,311	42,660	5.4
Tree nuts	488	1,369	35.6
All fruits & nuts	8,614	84,057	10.2
Fruit & vegetables			
Fresh, incl. fresh potatoes	7,113	78,172	9.1
Excluding bananas	7,113	72,083	9.9
Frozen, incl. potatoes	1,592	26,130	6.1
Canned, incl. potatoes	1,718	51,667	3.3
Other 4/	6,325	63,966	9.9
All fruits & vegetables	16,748	219,935	7.6

1/ All data are expressed in terms of fresh weight. 2/ Excludes potatoes.

3/ Includes pineapple. 4/ Includes sweet potatoes, dry beans, dry peas, mushrooms, fruit juice, dried fruits, tree nuts, dehydrated potatoes, and potato chips.

Source: Economic Research Service, USDA.

Vegetables

Foreign sales have become increasingly important within U.S. vegetable and melon markets. Exports claimed 8.4 percent of the 162 billion pounds in total U.S. vegetable supplies during 1997. This is up from 6 percent of supplies exported in 1990. Although the share of supply exported varies substantially among commodities, there is amazingly little variation across major aggregate commodity groupings. While 8.1 percent of fresh-market vegetables (excluding potatoes) were exported in 1997, 7.8 percent of canned vegetables and 8.3 percent of frozen vegetables were sent to other countries.

The most export-dependent vegetables are (table A-3):

- Onions for dehydration, 67 percent;
- Dry edible peas & lentils, 51 percent;
- Fresh-market cauliflower, 32 percent;
- Fresh-market broccoli, 19 percent;
- Dry edible beans, 18 percent;

Table A-3--Selected vegetables and melons: Share of supply exported

Crop	1975-77	1985-87	1995-97
	--Percent--		
Fresh:			
Potatoes	7.0	2.9	4.5
Tomatoes	6.8	7.0	6.3
Lettuce, head	6.1	8.6	6.0
Onions, dry bulb	6.4	5.2	8.5
Broccoli	---	14.4	18.6
Sweet corn	---	3.6	4.7
Cauliflower	---	13.7	31.8
Asparagus	10.9	15.1	18.1
Carrots	6.8	8.4	5.9
Cucumbers	5.5	5.0	4.4
Eggplant	---	---	15.5
Bell peppers	6.7	7.9	6.6
Celery	7.5	11.6	12.9
Watermelon	3.5	1.6	5.7
Cantaloupe	---	4.6	4.5
Snap beans	5.0	8.3	11.1
Cabbage	3.3	3.0	3.9
Garlic, all 1/	3.9	10.4	12.2
Canned:			
Tomatoes	1.0	0.9	6.2
Sweet corn	2.6	8.1	17.8
Snap beans	0.9	0.8	0.3
Green peas	0.5	0.3	2.5
Cucumbers (pickles)	0.3	0.9	1.8
Cabbage (sauerkraut)	---	---	4.3
Asparagus	2.5	2.3	9.8
Frozen: 2/			
Potatoes	---	2.9	9.0
Sweet corn	---	9.1	10.0
Green peas	---	3.3	4.2
Snap beans	---	---	2.5
Spinach	---	3.5	4.2
Dry:			
Pinto beans	8.8	16.0	11.6
Navy beans	12.5	22.6	22.7
Great Northern beans	24.9	36.5	26.1
Onions, dehydrated	46.5	42.4	66.6

-- = Not available. 1/ Data cover all uses. 2/ Data not available prior to 1978.

Source: USDA, Economic Research Service.

Although the United States has been a net importer of vegetables and melons (including potatoes, mushrooms, and pulses) during the past few years, the difference between imports and exports has been relatively small. In 1997, imports totaled \$3.1 billion, exceeding exports by less than \$50 million. However, in 1998, because of strong demand for fresh vegetables and melons due in part to El Niño-disrupted domestic supplies, the value of imports reached \$3.7 billion while exports reached \$3.2 billion. Most of the gain in exports in 1998 came from fresh vegetables, dry beans, and dried vegetable products.

Fresh Vegetables

Exports of fresh-market vegetables and melons account for 8.1 percent of available supplies. In value terms, fresh-market vegetables and melons claimed the largest share of total vegetable exports at about \$1.1 billion for each of the past 5

years. There is a discernable seasonal pattern to fresh exports, with volume peaking in the spring and reaching a low during the summer months. This pattern is largely influenced by demand from Canada, our leading foreign market. Canada's vegetable imports are lowest during their summer growing season and peak in the spring when their supplies of storage-type vegetables are exhausted and before their own growing season has begun.

Lettuce (all types) was the largest fresh export (\$159 million in 1997), but lettuce also enjoys relatively strong domestic demand. The same is true for tomatoes, the second largest fresh export (\$131 million). Exports remove just 6 percent of domestic supplies for these two commodities (table A-3). This percentage has remained fairly constant for several decades as growth in domestic consumption has matched rising exports.

Fully a third of cauliflower supplies move into export markets, making it the most export-dependent fresh-market vegetable. This dependence has been increasing over the past decade. While cauliflower exports were double the levels of 10 years ago, production has declined, reflecting shrinking domestic demand. Per capita use of fresh-market cauliflower was 1.6 pounds in 1997, down from 2.2 pounds in 1988. In addition to cauliflower, fresh-market broccoli, asparagus, and eggplant are also heavily dependent on exports.

Japan and Canada account for the majority of U.S. cauliflower and broccoli exports. While Canada has been an important market for years, sales to Japan have been rising over the past decade. Because of the recession in Japan, demand for some U.S. vegetables has slowed. When prosperity returns to Japan in the next few years, U.S. fresh-vegetable exports are expected to continue their long-term growth.

Frozen Vegetables

Export demand for U.S. frozen vegetables (including potatoes) has increased substantially during the past decade. Exports accounted for 9 percent of U.S. frozen vegetable supplies in 1997, compared with 6 percent in 1990. In 1998, U.S. frozen vegetable exports (including potatoes) totaled about 1.5 billion pounds, with a value of \$518 million. Potato products (primarily french fries) account for 71 percent of all frozen vegetable export volume. Frozen potato exports have been rising strongly for many years, fueled by the expansion of U.S. fast food establishments overseas, particularly in Japan. Excluding potatoes, frozen vegetable exports (on a fresh-weight basis) totaled 994 million pounds in 1998—up 8 percent from 1997.

Japan is the largest export market for U.S. frozen vegetables, accounting for 49 percent of the total value in 1998. Other important markets include South Korea, Hong Kong, Canada, and Mexico. Growth in U.S. frozen vegetable exports to Japan has been steady. U.S. frozen vegetable exports to Japan have risen 70 percent since 1990. The

United States holds close to half of the Japanese frozen vegetable market (competing primarily with China, Taiwan, and New Zealand). French fried potatoes and sweet corn account for the majority of the frozen vegetables sold to Japan. Despite the economic recession there, exports of french fries to Japan increased 15 percent in 1998.

Exports to Mexico have risen by a factor of 6 during the 1990s—propelled primarily by frozen french fries. Mexico is now the destination for 5 percent of U.S. frozen vegetable exports. Exports to Mexico rose for the third consecutive year following the decline of 1995 caused by a weakening economy.

With the exception of potatoes, U.S. demand for frozen vegetables appears to have become stagnant during the past 5 years. If domestic demand cannot be stimulated in the future, the importance of exports rises, with sector growth hinging on increased overseas sales. Fortunately, interest in American-style foods continues to surge in many parts of the world. This should continue to support the export of products like frozen potatoes and sweet corn and raise the profile of exports in the frozen vegetable sector.

Canned Vegetables

Exports of canned vegetables account for around 8 percent of available supplies. This is up from 2 percent in the mid-1980s and 1 percent in the mid-1970s. In terms of value, canned vegetables account for the second largest share of exports at about \$0.6 billion. Sweet corn is the largest canned vegetable exported, with about a fourth of the total value. Tomato paste and tomato sauces round out the top three canned exports.

Canada is the leading export market for U.S. canned vegetables. Exports to Canada have nearly quadrupled since 1990, with Canada now accounting for 39 percent of all canned vegetable export value—up from 22 percent in 1990. Japan is the second largest U.S. market, with 15 percent of canned export value, while another combined 12 percent of supplies are exported to Taiwan, South Korea, Hong Kong, and Singapore. A prolonged recession in Japan has limited U.S. exports the past few years. As a result, since peaking in 1995, canned exports to Japan declined in 1996 and since have stagnated. This is similar to the downturn experienced by fresh vegetable exporters. It is expected that exports will rebound with improvement in Japan's economy.

Rising export shares largely reflect the efforts of vegetable canners to expand markets overseas to compensate for the slow erosion of domestic demand over the past 30 years. During this time, U.S. consumers have been slowly switching their allegiance to fresh and frozen forms of vegetables. For example, per capita use of canned sweet corn has declined from around 14 pounds in the early 1970s to 9.4 pounds today. At the same time, use of frozen sweet corn has moved from around 6 pounds in the early 1970s to over

10 pounds now. After slumping in the late 1980s, per capita use of fresh-market sweet corn is now close to a pound higher than the early 1970s.

Dry Vegetables

Based on limited data for dehydrated vegetables, dehydrated onions are the most export-dependent vegetable commodity. Although exports are undoubtedly important for this industry, the lack of stock data for finished onion products likely results in an overstatement of the contribution of export sales to the industry. If we assume a third of production is carried over as finished inventory the following year, the export dependency of dehydrated onions declines to roughly 50 percent.

A limited domestic market makes exports critical for dry peas and lentils (an industry for which we do have stocks data). About half of dry pea and lentil supplies move into foreign markets. Many of these overseas transactions involve purchases by the U.S. Government (CCC) for humanitarian food aid. The Federal Government also purchases dry peas and lentils for various domestic feeding programs. Along with dry beans, peas and lentils are popular in food aid programs because they are easy to transport, are readily accepted foods worldwide, and are a cheap source of protein.

Close to a fifth of dry edible bean supplies are shipped to foreign markets. This food category is actually composed of several separate bean markets and each vary in export dependence. Among dry beans, Great Northern beans are the most dependent on exports, with close to a third of supplies being shipped overseas. Unfortunately, Iraq has historically been the most important market. The embargo on exports to Iraq resulted in a substantial contraction of the Great Northern market, with both exports and domestic production declining sharply in the early 1990s.

Fresh Fruit

The fresh fruit industry relies heavily on export markets, with about 6 billion pounds exported in 1998 at a value of \$1.8 billion. Fresh fruit most heavily dependent on exports include grapefruit, cherries, lemons, plums, oranges, apricots, pears, and apples (table A-4). Canada has been the leading destination for U.S. fresh fruit throughout the nineties, accounting for about a third of all fresh fruit exports in 1998. The other major markets are Japan, Hong Kong, Taiwan, and Mexico.

The grapefruit industry relies the most on exports, as U.S. per capita consumption for grapefruit has remained relatively stable throughout the nineties while production has grown. From 1995-97, 40 percent of the grapefruit supply was exported, 24 percent more than in the mid-eighties. Japan has been the major foreign market for grapefruit in the nineties and maintained its market share in 1998 despite that country's recession. Japan, along with Canada, France,

Table A-4--Selected fruits and tree nuts: Share of supply exported

Crop	1975-77	1985-87	1995-97
--Percent--			
Fresh:			
Grapefruit	23.98	32.28	40.13
Cherries 1/	7.93	19.06	38.98
Lemons	51.88	36.78	27.35
Plums	12.78	18.78	27.15
Oranges	23.46	27.07	26.94
Apricots	16.51	18.00	25.79
Pears	11.27	11.83	24.91
Apples	6.04	9.58	21.85
Grapes	24.24	18.71	19.93
Papayas	--	19.01	11.83
Peaches	2.72	6.71	11.61
Kiwifruit	--	29.93	9.30
Cranberries	--	--	9.30
Strawberries	4.83	6.88	9.22
Blueberries	--	--	8.92
Tangerines	5.52	6.46	7.28
Mangoes	--	10.38	6.31
Avocados	16.51	6.25	4.81
Pineapples	3.73	4.33	2.98
Limes	10.69	6.68	2.23
Frozen: 2/			
Sweet Cherries	0.79	8.00	20.23
Blueberries	3.19	8.25	13.83
Strawberries	3.00	1.75	7.62
Canned:			
Sweet cherries	14.17	51.28	59.96
Tart cherries	26.74	3.09	14.46
Peaches	6.16	2.64	3.50
Dried:			
Raisins	28.75	29.69	37.33
Prunes	41.07	35.05	33.19
Dates	15.21	14.43	19.35
Juice:			
Grape	--	12.20	16.59
Orange	5.54	4.46	6.98
Grapefruit	6.56	6.42	6.94
Apple	4.51	1.58	3.13
Nuts:			
Almond	47.18	47.75	63.32
Hazelnuts	6.90	33.78	49.67
Pistachio	0.97	6.78	49.72
Walnut	20.92	23.52	39.92

1/ Includes sweet and tart cherries. 2/ Average of 1976 to 1977.

Data not available prior to 1976.

Source: USDA, Economic Research Service.

the Netherlands, and Taiwan accounted for 83 percent of fresh grapefruit shipments in 1998.

Fresh oranges account for the largest volume of fresh fruit exports in the nineties, accounting for over a quarter of the total. While the quantity of fresh orange exports grew in the seventies and early eighties, it appears to have leveled out since the mid-eighties. This may be due partly to the maturing of the export markets and presently due to limited trade potential in other markets.

Fresh apple exports have taken off since the mid-eighties, increasing from a 10-percent share of supply to a 22-percent

share during 1995-97. While exports have been growing steadily to major export markets led by Taiwan and Canada, exports to Mexico grew rapidly throughout the nineties, even before the enactment of the North American Free Trade Agreement (NAFTA). In fact, since NAFTA, the quantity of fresh apple exports to Mexico has slowed due to the peso devaluation and the dumping charges the Mexican Government brought against Washington State apple growers in 1998. With the resolution of the dumping case, fresh apple exports to Mexico should resume and continue to expand. Further expansion of fresh apple trade to other countries is hampered by phytosanitary bans or restrictions in major markets such as Japan and South Korea, virtually closing these markets to U.S. apples. There has been recent action in Japan to move towards opening its markets to an increased number of apple varieties. Since Japan is such an important market for U.S. fresh fruit, any lowering of trade barriers should increase apple exports in the coming years.

Frozen Fruit

The share of frozen fruit supply exported has more than doubled since 1990, with 119 million pounds shipped in 1998 at a value of \$73 million. Berries make up the major portion of frozen fruit. Strawberries are the most important berry, accounting for about 40 percent of all frozen fruit exports. Frozen strawberry exports have increased sharply since 1992 as domestic production has grown faster than consumption.

Compared with fresh and canned fruits, Americans do not consume many frozen fruit products. Supplies totaled about 1.8 billion pounds in 1997, making the United States a major producer of frozen fruit products in the world. These domestic supplies are largely adequate to satisfy demand. Therefore, trade in frozen fruit is relatively small, with imports and exports each accounting for about 6 percent of supply in 1997.

Japan and Canada are the two largest foreign markets for U.S. frozen fruit, with each country's share of the market growing during the 1990s. These two countries accounted for 56 percent of U.S. frozen fruit exports in 1998.

Canned Fruit

Canned fruit exports accounted for less than 2 percent of domestic supply in both 1990 and 1997. Canned peaches comprised the largest quantity of canned fruit exported, however, only 3.5 percent of canned peach supply was exported during 1995-97. The quantity of supply exported is understated, however, because the United States ships fresh clingstone (canning) peaches to Mexico where they are canned for the Mexican market. Exports of canned peaches to Mexico have also been growing in recent years, making Mexico the largest foreign market for U.S. canned peaches, followed by Canada. Exports to France and other European countries are generally low, except when production in Greece, the major European producer of canned peaches, is down.

Dried Fruit

Almost a third of U.S. dried fruit supply was exported in 1997—the largest proportion of any fruit product. The United States is a major world grower of dried fruit, producing the largest quantity of prunes, and alternating with Turkey as the largest raisin producer. Japan accounted for about a quarter of the shipments, followed by the United Kingdom, Canada, and Germany. Raisins accounted for over a half of dried fruit exports in 1998, of which almost a quarter went to the United Kingdom. Following Japan and Canada, the European Union (EU) is the major destination for U.S. raisins overseas. Prune exports accounted for about a third of dried fruit exports, with Japan and the EU the major markets.

Fruit Juices

Only about 7 percent of fruit juice supplies were exported in 1997. Most is consumed domestically, as U.S. fruit juice consumption has remained strong in the nineties. Orange juice comprised about half the juice exports in 1998, although typically only about 7 percent of U.S. orange juice is exported. As the world's largest orange juice consumer, the United States usually imports more orange juice than it exports. Canada, the EU, and Japan are the major markets for U.S. orange juice. These same countries are also major buyers of grapefruit, grape, and apple juices.

Tree Nuts

About 35 percent of U.S. tree nut supply was exported in 1997, the same as in 1990. Almonds are an important agricultural export product from the United States, ranking as California's second most valuable agricultural export behind cotton in the mid-nineties. In 1998, almonds accounted for 56 percent of all nut exports, with a value of \$760 million (shelled-basis). Germany imported about a quarter of U.S. almond exports in 1998, much of which is used to make almond paste and marzipan. Spain and Japan fill out the other top three destinations. The EU and Japan also topped the export markets for walnuts.

Conclusion

While the domestic market remains the major outlet for almost all fruits and vegetables raised in the United States, the role of exports has steadily increased. Part of this increase may reflect the maturation of some domestic markets, bringing a need to look elsewhere to sustain revenue growth. The fruit industry is more export-dependent than the vegetable industry, but both contain subsectors highly dependent on foreign sales. As global trade barriers fall, a relatively efficient U.S. fruit and vegetable industry selling quality products should continue to reap the benefits of world commerce in the new millennium.